10. EVALUATION OF THE OCEAN DISCHARGE CRITERIA

This chapter discusses the ten factors that the Regional Administrator must consider in the analysis of compliance of this permit with Section 403 of the Clean Water Act, how conditions and limitations included in the final general permit for the Eastern Portion of the Outer Continental Shelf (OCS) ensure compliance with these ocean discharge criteria, and the determination, under Section 403, that this NPDES permit will not cause unreasonable degradation of the marine environment with all permit limitations, conditions, and monitoring requirements in effect.

10.1 Introduction

The ten factors for determining unreasonable degradation were presented in Chapter 1. The chapters that followed discussed the available information concerning the issues to be evaluated. This chapter presents a summary of these issues, the conditions and limitations that are included by the Region in the final NPDES permit that ensure compliance with Section 403, and a discussion of the determination that no unreasonable degradation of the marine environment will result from discharges authorized by this permit.

10.2 Evaluation of the Ten Ocean Discharge Criteria

Factor 1 - Quantities, Composition, and Potential for Bioaccumulation or Persistence of Pollutants

The quantities and composition of the discharged material was presented in Chapter 3 and the potential for bioaccumulation or persistence was addressed in Chapter 5. For discharges other than drilling fluids, the volume and constituents of the discharged material are not considered sufficient to pose a potential problem through bioaccumulation or persistence. However, to confirm the Agency's decision and as a precaution against any changes in operational practices that could change the Agency's assumptions, the discharged volumes of deck drainage, well treatment, completion, and workover fluids, and sanitary waste must be recorded monthly and reported once each year on the compliance monitoring report.

EPA is limiting the potential for bioaccumulation or persistence of discharge-related pollutants by placing specific limitations on metals contained in the barite added to water-based drilling fluids. The limits on cadmium and mercury will ensure that not only these two metals but an entire suite of other trace metals found in barite will be reduced in concentration, and their potential for bioaccumulation and persistence thereby decreased.

Factor 2 - Potential for Biological, Physical, or Chemical Transport

Chapter 4 of this document is based on the literature available concerning the transport of water based and synthetic based drilling fluids in the marine environment. Under a general permit, it is not possible to determine the potential for physical transport at each facility due to varying currents, discharge rates and configurations, and fluctuating effluent characteristics. Therefore, for drilling fluids, generalizations and assumptions were made to project scenarios to describe the industry and the coverage

area. A protective modeling approach, which was appropriate to the area of coverage of this permit, was used to determine potential physical transport processes and to regulate discharges of drilling fluids based on the predicted dilutions and dispersions.

Drilling fluids are regulated based on the modeling predictions about how the waste streams will behave when introduced into the marine environment. Discharge rate restrictions for drilling fluids are the result of the predicted transport of the constituents of the effluent.

Biological and chemical transport processes are not as well understood for drilling fluid discharges. The literature available is inconclusive about these processes and computer models do not account for them. Bioturbation should serve to mix sediments vertically, thereby enhancing the dispersion of muds and cuttings. The physical transport of these waste streams is considered to be the most significant source for dispersion of the wastes and monitoring and regulation is based on the results of those investigations.

Factor 3 - Composition and Vulnerability of Biological Communities

The third factor used to determine no unreasonable degradation of the marine environment is an assessment of the presence of unique species or communities of species, endangered species, or species critical to the structure or function of the ecosystem. Chapter 6 describes the biological community of the eastern Gulf including the presence of endangered species and factors that make these communities or species vulnerable to the permitted activities.

Drilling fluids (and the drilling fluids that adhere to cuttings) have been shown to cause smothering effects when discharged to shallow waters. The permit covers areas in deep waters of the Gulf of Mexico and the permit prohibits the discharge of neat synthetic based fluids and restricts the water based fluids discharge rate to 1,000 bbl/hr for all areas. The potential impacts due to toxic effects from drilling fluids have been reduced by placing restrictions on total toxicity. This toxicity limitation ensures that the whole effluent will not be toxic to pelagic or benthic species once mixed with the receiving water.

In Chapter 6, the biological community and its health are described according to available literature. The permit coverage area may include habitats that are sensitive to the discharges that may occur and special conditions have been implemented through the permit. MMS has special stipulations for chemosynthetic communities in the Gulf and when an operator proposes to commence drilling on a lease containing these communities, MMS may require mitigations to protect them from impact.

Factor 4 - Importance of the Receiving Water to the Surrounding Biological Community

The importance of the receiving waters to the species and communities of the eastern Gulf is discussed in Chapter 6 in conjunction with the discussion of the species and biological communities. The receiving water is considered when determining the discharge rate restrictions. The dispersion modeling considered concentrations of pollutants that may have impacts on aquatic life (through

evaluation of marine water quality criteria - see Factor 10, below) and the toxicity limitations on both drilling fluids ensure that levels of the effluent is below levels that could have impacts on local biological communities. By protecting local biological communities, EPA believes that adverse impacts on species migrating to coastal or inland waters for spawning or breeding will also be protected.

In addition, free oil, toxicity, oil content, oil and grease levels, solids, and chlorine concentrations are monitored in selected waste streams in order to ensure adequate water quality. Other requirements that apply to all discharges are no discharge of visible foam and minimal use of dispersants, surfactants, and detergents.

Factor 5 - Existence of Special Aquatic Sites

No designated Special Aquatic Sites are known to be present within the lease blocks under consideration or adjacent lease blocks.

Factor 6 - Potential Impacts on Human Health

Chapter 9 details the Federal and state human health criteria and standards for pollutants in drilling fluids. These criteria and standards are for marine waters based on based on fish consumption. These analyses compare projected pollutant concentrations at 100 m with these criteria and standards.

The permit prohibits the discharge of free oil, oil-based muds, synthetic based muds and muds with diesel oil added. These prohibitions are based on the potential effects of the organic pollutants in these discharges to human and aquatic life. In addition, the limitations that require low levels of cadmium and mercury in the barite added to drilling fluids also effectively lower the concentrations of other heavy metals found in barite.

Factor 7 - Recreational or Commercial Fisheries

The commercial and recreational fisheries businesses in Alabama, Florida, and Mississippi are assessed in Chapter 7. The conditions and limitations in the permit were determined to protect water quality and preserve the health of these fisheries. These permit conditions and limitations include no discharge of free oil, no discharge of oil-based or synthetic based muds, no discharge of diesel oil, no discharge of produced sand, and no discharge of produced water, discharge rate limitations around live-bottom areas, and limitations on the whole effluent toxicity of water based and synthetic based drilling fluids.

Factor 8 - Coastal Zone Management Plans

Chapter 8 provides an evaluation of the coastal zone management plans of Alabama, Florida, and Mississippi. The states will have an opportunity to review the proposed permit to determine consistency

with their plans. As detailed in Chapter 8, the permit meets the requirements of the plans implemented by the states and is considered by the Region to be in compliance with those plans.

Factor 9 - Other Factors Relating to Effects of the Discharge

The BAT (Best Available Technology Economically Achievable) and BCT (Best Conventional Pollutant Control Technology) effluent limitation guidelines for the Offshore Subcategory were promulgated in 1993. BAT conditions within the permit include: cadmium and mercury limitations in barite; toxicity limitations in drilling muds; no free oil discharge from drilling fluids, well treatment, completion, and workover (TWC) fluids, deck drainage, well test fluids or minor wastes; no oil-based drilling fluids discharge; produced water and TWC fluid oil and grease limitations; no discharge of produced sand; residual chlorine limitations in sanitary wastes; and no floating solids in either domestic or sanitary wastes. Final Effluent Limitation Guidelines and Standards for Synthetic-based Drilling Fluids (promulgated in 2001) prohibit the discharge of neat synthetic based drilling fluids and limit the amount retained on drill cuttings discharges.

Factor 10 - Marine Water Quality Criteria

The Federal and state marine water quality criteria and standards for pollutants found in drilling fluids are assessed in Chapter 9. The potential effects due to organic pollutants in drilling fluids have been eliminated with the prohibition of the use of oil-based muds and diesel oil and the discharge of neat synthetic based muds. The heavy metals that exist in drilling fluids have been reduced in concentration by requiring the use of clean barite measured by the concentration of cadmium and mercury.

10.3 Conclusions

After consideration of the ten factors discussed above and elsewhere in this document, it is determined that no unreasonable degradation of the marine environment will result from the discharges authorized under this permit, with all permit limitations, conditions, and monitoring requirements in effect. After reviewing the available data, the Region has included a variety of technology-based, water quality-based, and Section 403-based requirements in the final permit to ensure compliance with Section 403 of the Clean Water Act, under a no reasonable degradation determination as well as other relevant sections of the Act.